Visual processing and gaze

Title

Gaze behaviour in pirouettes – does spotting help to keep a dancer stable?

Authors/Affiliation

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Abstract

Introduction

The present study seeks to investigate more closely the role of spotting in ballet dancers. During spotting - a specific gaze behaviour adopted by dancers during consecutive turns – the head and gaze are fixed to a single 'spot' as long as possible while the rest of the body rotates. When this fixation can no longer be maintained, the head quickly rotates, overtaking the rest of the body to face the original spot once again. It could be hypothesised that spotting is functional in preventing dizziness, or that it is unrelated to dizziness but rather facilitates precise realignment of the body in the spatial reference framework and therefore guarantees postural stability. In the former case the role of the vestibular system would be crucial; in the latter case the visual reference frame would be most important. The present study aims to uncover - in a first step - whether spotting helps postural stability after repeated body rotation and whether dizziness is less distinct after rotations with than without spotting.

Methods

Therefore, we tested a sample of 24 amateur dancers (and we will test a sample of 24 expert dancers) for postural stability after they have turned consecutively around their longitudinal axis. For the passive turning condition, participants were rotated 14 times on a rotating chair with and without spotting. In the active turning condition, participants performed 14 consecutive turns with and without spotting at a constant speed (as instructed by the beats of a metronome). Before and after the rotations, Centre-of-Pressure (COP) displacement in quiet stance was measured on a force plate to examine postural stability. Moreover, to examine the dancers' diziness, participants indicated their perception of vertigo after-effect measured by self-assessment using a 0 – 20 scale (Keshavarz & Hecht, 2011). A one-way repeated measures ANOVA will be adopted to examine differences in postural stability and dizziness perception after the different turning conditions.

Results

Preliminary analyses revealed a difference in COP displacement between rotations with and without spotting in both the active and passive turning conditions for the amateur dancers. At the Conference, we will present an extensive summary of the data analysis for the 24 amateur dancers. We also plan to present data of the up-coming measurements with the expert dancers.

Discussion/Conclusion

Postural stability after consecutive whole body rotations with and without spotting has not been studied so far or only indirectly. Thus, the results will provide important insights on the role of spotting for balance in dance, relevant to researchers of postural control and dance professionals alike.

References

Keshavaz, B., & Hecht, H. (2011). Validating an efficient method to quantify motion sickness. *Human factors, 53(4)*, 415-426

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